KVMS Extender

User Guide

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1. Welcome

Thank you for buying the KVMS Extender system. This system is produced by Minicom Advanced Systems Limited.

This document provides installation and operation instructions for Minicom's KVMS Extender.

Technical precautions

This equipment generates radio frequency energy and if not installed in accordance with the manufacturer's instructions, may cause radio frequency interference.

This equipment complies with Part 15, Subpart J of the FCC rules for a Class A computing device. This equipment also complies with the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications. These above rules are designed to provide reasonable protection against such interference when operating the equipment in a commercial environment. If operation of this equipment in a residential area causes radio frequency interference, the user, and not Minicom Advanced Systems Limited, will be responsible.

Changes or modifications made to this equipment not expressly approved by Minicom Advanced Systems Limited could void the user's authority to operate the equipment.

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2. What is the KVMS Extender?

The KVMS Extender gives KVM & Serial extension and control up to 300m/1000ft away. It provides superior video quality over long distances and is an excellent solution for clean rooms, kiosks, museums, banks and any other places that need to keep their computers in a secure or environmentally controlled location.

3. Features

- KVM and serial control over single CAT5 cable
- High video resolution up to 1920X1440 @ 60Hz
- Dual-user function allows control by local or remote user
- Full RS-232 data communication up to 57,600 bps
- Skew compensation for easy video tuning
- Ideal for digital signage applications

4. System components

The KVMS Extender system consists of:

- 1 KVMS Extender Transmitter (p/n 1DT50002)
- 1 KVMS Extender Receiver (p/n 1DT50001)
- 1 (3 in 1) CPU cable (p/n 5CB10413)
- Serial Extender cable (p/n 5CB40018)
- RS232 Download cable (p/n 5CB40419)
- 2 power adapters (p/n 5PSA0013)
- Marketing & Documentation CD
- Optional rack mount set (p/n 5AC00288)

5. Compatibility

The KVMS Extender system supports all major operating systems.

6. KVMS Extender usage scenarios

The KVMS Extender can be used as:

- An extender
- A dual control unit

Figure 1 illustrates the KVMS Extender system as an extender, with the Transmitter up to 300m/1,000ft away from the Receiver. Figure 2 illustrates a dual control scenario, whereby either the local or extended user can access and control the computer.
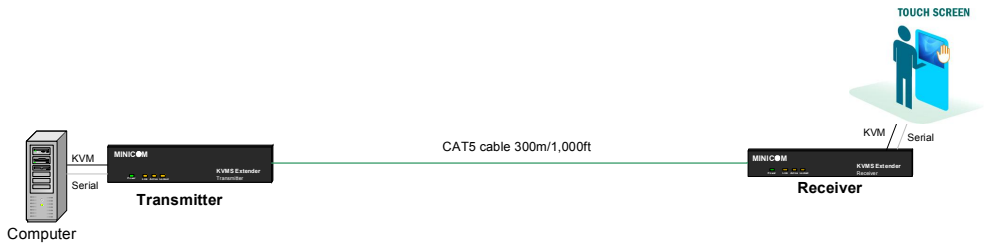

Figure 1 KVMS Extender as an extender
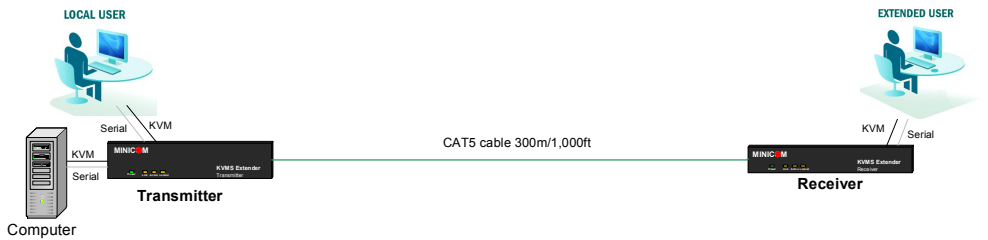
Figure 2 KVMS Extender in a dual control scenario

7. The KVMS Extender units

Figure 3 illustrates the front panel of the KVMS Extender Transmitter.
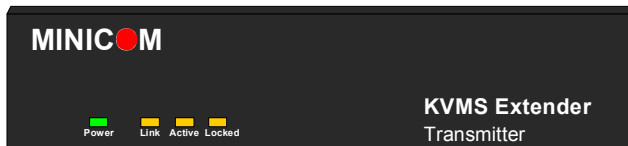
Figure 3 KVMS Extender Transmitter front

The table below explains the LEDs.

LED	Meaning
Power	Power indicator
Link	System cable connected to Transmitter and Receiver
Active	Steady: This unit currently has control. Blinking: The other currently has control.
Locked	The other unit has locked control preventing this unit from taking control

Figure 4 illustrates the back panel of the KVMS Extender Transmitter.
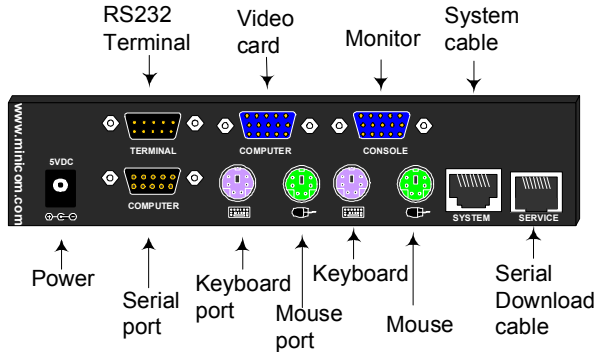
Figure 4 KVMS Extender Transmitter back

Figure 5 illustrates the front panel of the KVMS Extender Receiver.

Figure 5 KVMS Extender Receiver front

The LEDs are explained in the table above on page 4.

Figure 6 illustrates the back panel of the KVMS Extender Receiver.
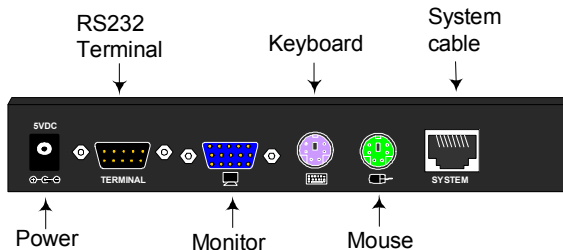

Figure 6 KVMS Extender Receiver back

8. Pre-installation guidelines

- Switch off the computer

- Place cables away from fluorescent lights, air conditioners, and machines that are likely to generate electrical noise

9. Rack mounting option for the KVMS Transmitter

To rack mount the Transmitter using the optional brackets and screws see Figure 7.

Insert screws to connect to rack

Insert screws to connect to Transmitter side panel
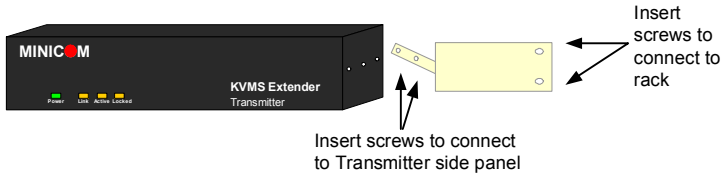
Figure 7 Rack mounting the KVMS Transmitter

10. Connecting the KVMS Extender system

Connect a CATx UTP or FTP 2x4x24 AWG Solid Wire cable to the System ports of the Transmitter and Receiver.

Connecting the Transmitter for an extension application

Figure 8 below illustrates both the KVM and Serial connections to the KVMS Extender Transmitter. Depending on the type of application you have, follow the steps now outlined for the KVM or Serial connections or both.

For the KVM connections:

1. Connect one end of the 3 in 1 CPU cable to the Transmitter's Computer ports.

2. Connect the other end of the 3 in 1 CPU cable to the computer's Video card and Keyboard and Mouse ports.

For the Serial connections:

Connect the Serial Extender cable to the Transmitter's Computer port and to a Serial port of the computer.

Figure 8 Transmitter connections – Extender

Connecting the Transmitter for a dual control application

Figure 9 below illustrates the KVM and Serial connections of the KVMS Extender Transmitter. Depending on the type of application you have, follow the steps now outlined for the KVM and/or Serial connections.

KVM connections:

1. Connect a keyboard monitor and mouse to the Transmitter's Console ports.

2. Connect one end of the 3 in 1 CPU cable to the Transmitter's Computer ports.

3. Connect the other end of the 3 in 1 CPU cable to the computer's Video card and Keyboard and Mouse ports.

Serial connections:

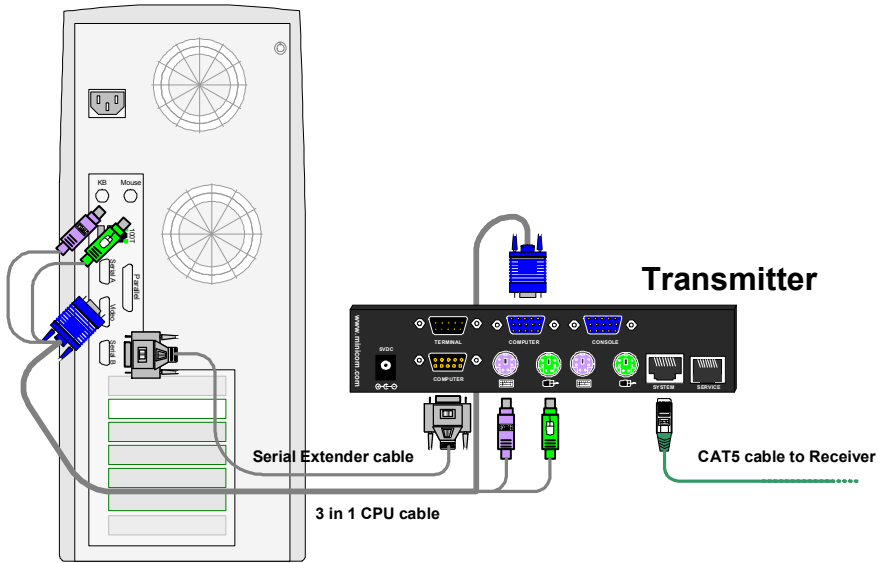1. Connect the Serial Extender cable to the Transmitter's Computer port and to a Serial port of the computer.

2. Connect the Serial device to the Transmitter's Terminal port.
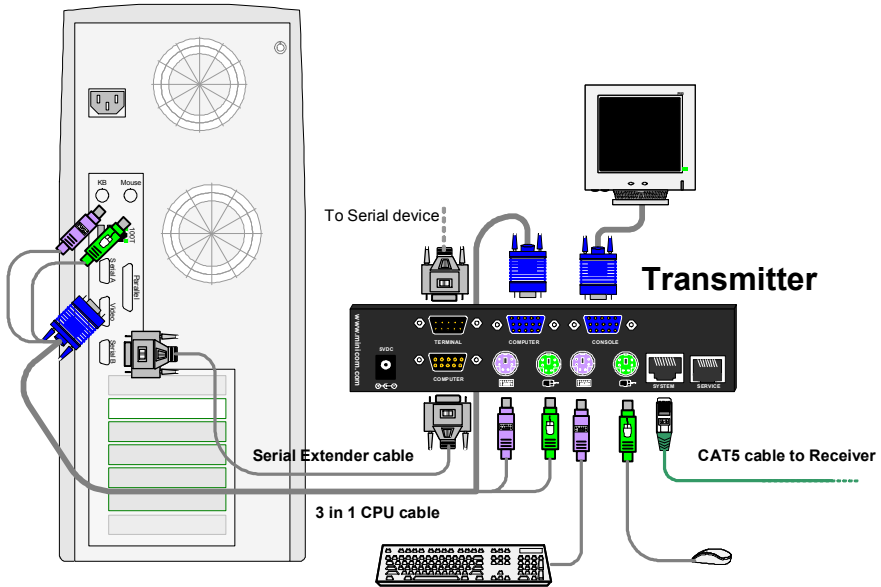
Figure 9 Transmitter connections – dual control

Note! Although we recommend connecting the Transmitter to a switched off computer, you can connect it to a switched on computer.

To do so you must connect it in the following order:

1. Connect a keyboard monitor and mouse to the Transmitter's Console ports.

2. Connect the supplied 5VDC power adapter to the Transmitter, plug into a wall socket and power the Transmitter on.

3. Connect one end of the 3 in 1 CPU cable to the Transmitter's Computer ports.

4. Connect the other end of the 3 in 1 CPU cable to the computer in the following order:

(A)   Mouse connector.

(B)   Keyboard connector.

(C)   Video connector.

Connecting the Receiver

Figure 10 below illustrates the KVM and Serial connections of the KVMS Extender Receiver. Depending on the type of application you have, follow the steps now outlined for the KVM and/or Serial connections.

KVM connections: Connect a keyboard monitor and mouse to the Receiver's KVM ports.

Serial connections: Connect the Serial device to the Receiver's Terminal port

To Serial device

Receiver

CAT5 cable to Transmitter
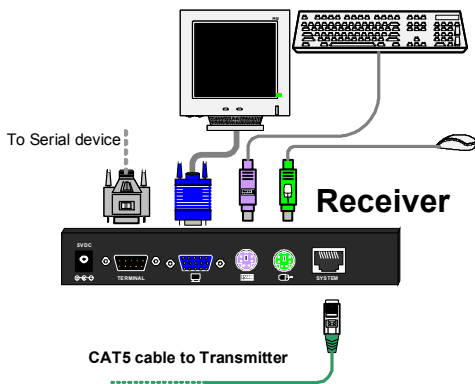
Figure 10 Receiver connections

11. Connecting to the power supply

1. Connect the supplied 5VDC power adapters to the Transmitter and Receiver and plug into a wall socket.

2. Power on the computer. The KVMS Extender system transmits the KVM and Serial signals.

12. Adjusting the picture quality

When necessary, you can adjust the picture quality temporarily using the Adjustment hotkey; **Shift**, **D**. From the Receiver position press **Shift**, release **Shift** then press **D**, the picture adjusts. There are 6 looped preset adjustments. Press the hotkey until the picture quality is satisfactory. Once the Receiver is switched off the adjustment is lost. Adjustments are only saved in the KVMS Settings mode, see the section below.

13. Configuring the KVMS system

The KVMS system has a number of configuration options. For example, control, timeout, DDC refresh and video tuning. Also for UNIX servers, you must configure the keyboard setting.

All adjustments are made from the Receiver position.

To enter the KVMS Settings:

1. Ensure that the input language is English. Check the language icon in the

   Systray .

2. Open any text editor, e.g. Notepad or Word.

3. Press **Shift**, release **Shift** then press **F2**. The settings instructions appear see Figure 11.

available settings

0 video [b]oth a[c]tive
1 serial control [l]ocal [r]emote a[c]tive
2 lock [e]nable [d]isable
3 take control [h]otkey [t]imeout
4 timeout [xxx] sec
5 hotkey [s]hift [c]ontrol [p]rintscreen
6 keyboard [p]c unix u[1] u[2] u[3]

available actions

7 ddc refresh [l]ocal [r]emote
8 video brightness and tuning
 simultaniuosly press one key of the following
 [l]uminance
 [e]qualization
 [r]ed delay
 [g]reen delay
 [b]lue delay
 and
 [left arrow] to decrease or [right arrow] to increase
 [d]efault settings

press option number and letter to change
and
[enter] to save and exit option
or
[q] to exit option without saving

press [f6] to show current configuration
press [esc] to exit

Figure 11 Settings instructions

4. Press **F6** to see the current configuration, see Figure 12.

current configuration

video - both
serial control - local
lock - disable
timeout - 002
take control - timeout
hotkey - shift
keyboard - pc

video brightness and tuning
luminance - 155
equalization - 000
red delay - 000
blue delay - 000
green delay - 000

Figure 12 Default current configuration

Changing the settings

Each setting instruction starts with a number. This is followed by the available options with a bracketed letter for each option.

To change a setting:

1. Press the keyboard number to enter the setting.

2. Press the keyboard letter of the desired option.

3. Press **Enter** until a confirmation appears that the settings are saved. Once saved you exit the option.

Or

Press **q** to exit the option without saving.

4. Press **Esc** to exit the KVMS settings.

Note 1: Video quality adjustments can also be done using a hotkey with 6 preset adjustments as explained in the Video brightness and tuning section below.

Note 2: Settings 0-5, only apply to the dual control scenario.

0 Video

You can have the screen appear at both Transmitter and Receiver positions, or only at the currently active position. **Tip!** For an extender application set the video display to appear at both positions.

1. Press 0. Text appears showing that you are in the video display mode.

2. Press **b** to have both positions display the video, or press **c** to have only the active station showing the video.

3. Press **Enter** twice to save and exit the option.

The rest of the settings are explained below. To change them follow the steps as outlined at the beginning of this section.

1 Serial control

You can have serial control at either the Transmitter (local) or at the Receiver (remote) or at whichever position takes control (active). **Tip!** For an extender application set serial control to be at the remote position.

2 Lock

Lock disabled allows the currently non-controlling position to take control by the method outlined below in **3 Take control**.

When Lock is enabled, control can be locked at one position preventing the other position from taking control.

Section 14 on page 15 explains how the system operates when Lock is disabled or enabled.

3 Take control

When control is not locked at one position, the non-controlling position can gain control after a period of inactivity (timeout) or by pressing the hotkey **Shift**, **F10**. Choose the method for taking control from the other position, either by timeout (default) or hotkey.

Tip! For an extender application set switching control to be by timeout.

Tip! For a dual control application when the video is set to display at the current active position, set switching control to be by hotkey

4 Timeout

When using the timeout period for taking control, you can change the timeout period by typing a 3 digit number. For example, for a 50 second period, type 050. By default timeout is 2 seconds.

5 Hotkey

You can change the hotkey from **Shift** to **Control** or **PrintScreen**. Once changed, for every reference in this guide to **Shift** use the new hotkey.

6 Keyboard

The system operates with DOS, Windows, Novell, Linux, UNIX, HP UNIX, QNX, SGI, FreeBSD, BeOS, Open VMS.

By default the Keyboard mode is set to PC which is suitable for most operating systems.

Listed below is the keyboard mode for particular UNIX systems:

- U1 for HP UX
- U2 for Alpha UNIX, SGI, Open VMS
- U3 for IBM AIX

Set the Keyboard mode according to above list.

7 DDC refresh

Display Data Channel (DDC) is a VESA standard for exchanging information between a monitor and a video adapter.

In extender mode where there is no monitor connected to the Transmitter, the computer boots with the default resolution and refresh rate. This may not be suitable for the Receiver monitor. Choose to input the Receiver (remote) monitor's DDC information into the Transmitter's memory. On booting the computer will emulate the Receiver monitor type.

Update the DDC information if you replace the monitor.

For a dual control scenario, we recommend using similar monitors at both locations. When the monitors are not similar, input the DDC information of the lower resolution monitor.

8 Video brightness and tuning

Where the image quality is unsatisfactory you can adjust it in the following 2 ways:

- Video Adjustment hotkey - 6 looped preset adjustments
- Video Adjustment tuning – for fine tuning

Press 8 to enter the Video adjustment settings.

Video Adjustment hotkey

Adjust the video quality using the 6 looped preset adjustments. Press **D** until the picture quality is satisfactory.

Once you have a satisfactory image, press **Enter** twice to save and exit the option.

Video Adjustment tuning

Where the image needs further tuning after using the video Adjustment hotkey, do the following:

Open the test card located on our website www.minicom.com/support/skew.png or www.minicom.com/support/skew.gif or, on the supplied CD. See Figure 13. This image will help you get the best screen image. It can also help to correct skew.
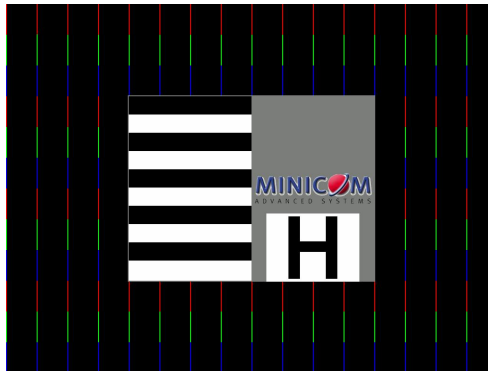

Figure 13 Test card

Press a letter key according to the list below and press the right or left arrow key to adjust the image.

- [l]uminance – image brightness
- [e]qualization – image sharpness
- [r]ed delay – explained below
- [g]reen delay– explained below
- [b]lue delay– explained below

Notes:

(a)   When you press one of the above letters, all three keyboard LEDs blink indicating that you are in adjustment mode.

(b)   While pressing the arrow keys, when you reach the adjustment limits the keyboard LEDs stop blinking.

After making an adjustment, you can press another letter key from the above list to make a different adjustment.

Once you have a satisfactory image, press **Enter** twice to save and exit the option.

Red, green, blue delay

When transmitting video over CAT5 cables a horizontal misalignment (skew) between the red, green and blue components inevitably occurs. This is because the different length of each pair causes the signals to reach the monitor at different times.

To see which signal is slower or faster look at the test card and see which of the colors are not aligned. For example in Figure 14, red is the slowest color. You would therefore delay green and blue until they align with red.
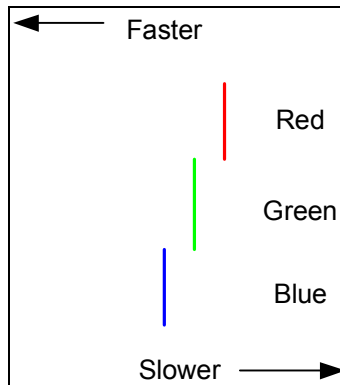

Figure 14 RGB signals

14. Operating the system

In general the system is controlled in a first come first served basis, with either the Transmitter or Receiver position taking control. The other position can gain control by using the mouse/keyboard after the period of inactivity (timeout), or by pressing the hotkey **Shift**, **F10** – depending on the method chosen in the KVMS Extender settings– see pages 12 and 12.

Lock disable/enable

By default Lock is disabled. When you enable Lock in the KVMS Extender settings, the current controlling position can lock control so that the other position cannot gain control.

To lock control:

Press **Shift**, **F12**. The controlling position's Lock LED blinks. The other position's Lock LED illuminates and the Active LED blinks.

To release control, press **Shift**, **Esc**. The Lock LEDs darken. Either position can now take control.

15. Upgrading the firmware

Periodically Minicom will produce upgrades for both the Transmitter and Receiver firmware. The latest upgrades can be found on our website www.minicom.com in the Support section.

Upgrading is done using the Update software found on the supplied CD under Customer Support / Utilities or on our website in the Support menu.

Install the Upgrade software on any computer even one not part of the KVMS system with the following requirements:

- Pentium 166 or higher with 16 MB RAM and 10 MB free Hard Drive space
- Free Serial port
- Windows 2000 or higher

Once installed a KVMS Extender Update icon appears on the Desktop.

Upgrading is done from the Transmitter position. The following must be connected to the Transmitter:

- The Receiver via CAT5 cable
- The Download Serial cable

The Download Serial cable connects to the Transmitter's Service port and the computer's Serial port as illustrated below.
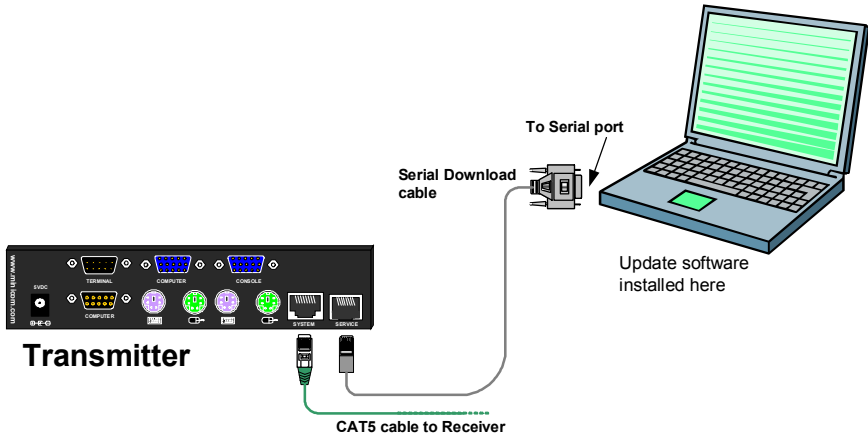
Figure 15 Serial Download cable

The KVMS Extender Update software

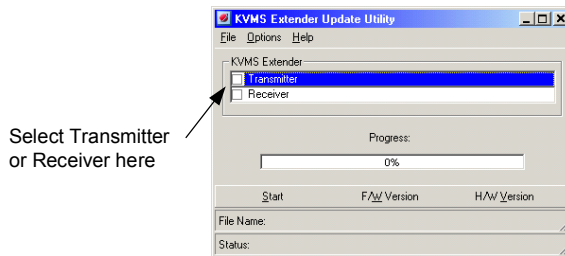Start the KVMS Extender Update software. The Update Utility window appears, see Figure 16.

Select Transmitter or Receiver here

Figure 16 Update Utility window

The table below explains the functions of the buttons and boxes.

Button or Box	Function
Start	Starts firmware download
F/W Version	Displays the firmware version number
H/W Version	Displays the hardware version number
File Name:	Name of Update file
Status:	Displays the type of process activated

Setting the Com port

1. From the Options menu choose Com Port. The Com Port box appears.
2. Select the Com port the Download Serial cable is connected to and click OK.

Verifying the version numbers

Before upgrading the firmware, you must verify which firmware and hardware versions the units have.

To verify the Transmitter version numbers:

1. Select Transmitter.

2. Click F/W Version . The firmware version number appears.

3. Click H/W Version . The hardware version number appears.

To verify the Receiver version numbers:

Select Receiver then follow steps 2 and 3 above.

Note! When "**Not responding**" appears, check the Serial Download cable is connected, the units are powered on, and the correct Com port is selected.

Updating the firmware

To update the firmware:

1. Check the appropriate box – Receiver or Transmitter.

2. From the **File** menu, choose **Open**. The **Open** box appears. See Figure 17.

3. Navigate to the folder that contains the firmware update file that you downloaded from the Minicom website. You may only see the files that match the file selection mask.
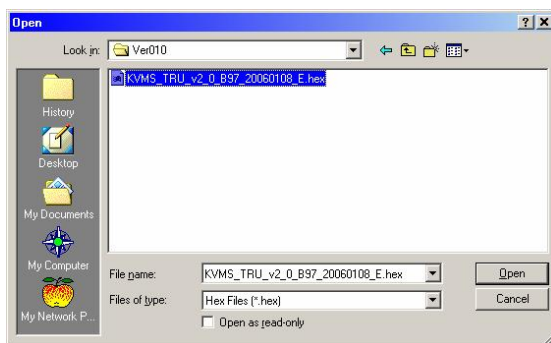

Figure 17 Open box

4. Open the file.

5. Click **Start**. The KVMS Extender Update flashes the firmware. On completion the firmware version number appears.

6. Check that the updated version number is correct by pressing F/W Version .

16. Safety

The device must only be opened by an authorized Minicom technician. Disconnect device from AC mains before service operation!

17. Tips

Below is a summary of the tips found throughout this guide.

For an extender application:

- Set serial control to be at the remote position
- Set switching control to be by timeout
- Set the video display to appear at both positions

For a dual control application:

- When the video is set to display at the current active position, set switching control to be by hotkey

18. Technical specifications

SYSTEM	
System cable	CATx UTP/ FTP 2x4x24 AWG Solid Wire cable
Maximum distance	300m/1,000ft
Baud rate	57,600 at up to 200m/660ft
Screen resolution	Up to 1920X1440 @ 60Hz (depending on the cable length)
Mouse support	2 or 3 or 5 button PS/2, Wheel mouse
Operating systems	All major operating systems including: Windows, Linux, UNIX and Novell
Operating temperature	0ºC to 40ºC/32ºF to 104ºF
Storage temperature	-40°C to 70°C/-40ºF to 158ºF
Humidity	80% non condensing relative humidity
Warranty	3 years

	Transmitter	Receiver
Connectors	VGA in/console – HDD15F Keyboard in/console– MiniDin6F Mouse in/console – MiniDin6F Serial in - DB9F Serial console - DB9M Service – RJ11 System – RJ45	VGA – HDD15F Keyboard – MiniDin6F Mouse – MiniDin6F Serial - DB9M System – RJ45
Dimensions	188x92x42mm/7.5x3.7x1.7in	188x92x28mm/7.5x3.7x1.1in
Power supply	External power adapter 5VDC 1A	External power adapter 5VDC 1A
Power consumption	5V/500mA	5V/800mA
Weight	400g / 0.9lb	310g / 0.7lb
Shipping weight	1.70 Kg / 3.8lb	

19. User guide feedback

Your feedback is very important to help us improve our documentation. Please email any comments to: ug.comments@minicom.com

Please include the following information: Guide name, part number and version number (as appears on the front cover).

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